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Mackay, Charles
Street tramways for London.

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STREET
TRAMWAYS
FOR
LONDON.

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STREET TRAMWAYS FOR LONDON,

THEIR UTILITY, CONVENIENCE, AND NECESSITY,

WITH

SOME REMARKS

ON THE

WORKING OF STREET RAILWAYS, IN THE
UNITED STATES AND CANADA,

BY

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STREET RAILWAYS FOR LONDON.

AMONG the great cities of the Old and New World, London, the wealthiest, busiest, and most populous of them all, has the evil but well-deserved reputation of being the worst supplied with the means of locomotion. Its four-wheel cabs are a disgrace to the municipal regulations that license and tolerate them—shabby without and frowsy within, with horses and drivers of corresponding wretchedness. The two-wheel cabs or Hansoms are a shade better, more respectable to look at, and more comfortable to ride in; but with the disadvantage of a clumsy and dangerous contrivance in the shape of a descending window, which, in bad weather, is sometimes let down upon the head of the person inside with unpleasant results to his hat or his head if he should happen to be leaning forward in his seat. Birmingham, Manchester, Liverpool, and other large towns have long possessed Hansom cabs with windows closing laterally, and under the control of the “fare;” but the London cab owners—slow to follow a good example, lest it should cost them a few pounds—stick, for the most part, to the old guillotine style of window, and will doubtless continue to do so until all the existing vehicles in their possession drop to pieces from old age and rottenness. The omnibuses, of which many thousands traverse all the principal thoroughfares from morning until midnight, are even worse than the cabs. They do not afford a sufficient amount of sitting room for the number of passengers which they are licensed to carry, even if the passengers should be of the ordinary girth, as every one knows who has witnessed the horror of eleven unfortunates of medium size when a twelfth, in the person of a very portly woman or a very stout man has procured admittance and insisted on a seat which

is not, but which ought to be, vacant. If the day be wet, and the stout passenger drips or steams with moisture, the discomfort of the situation is increased. In addition to this want of sitting room the London omnibuses have the defect of being so narrow as to make it a matter of surprise that any modest woman should condescend to enter them, compelled, as she may be, to struggle to a seat through a double row of projecting knees of male passengers who are not always gentlemen. Another inconvenience, the result of their deficient width, is that each incoming or outgoing passenger has a difficulty in making his way to or from a seat without treading upon the feet of the persons in possession. Such accidents are of frequent occurrence, and render omnibus travelling the reverse of agreeable to people who suffer from gout, corns, or tender feet, or who, not being afflicted with either of these maladies, have a natural disinclination to feel the weight of eight or ten stone dug into their toes or insteps by the boot-heel of friend or foe, acquaintance or stranger. Not only are these vehicles ill constructed, but they are for the most part ill ventilated. Sometimes the only ventilation obtainable, except that from the door, is from the window behind a passenger's neck, which the passenger nearest to it may desire to close and the other passengers to open, or vice versa,—a state of matters which is inconvenient, to say the least of it, and sometimes leads to unseemly altercations, and the betrayal of gross selfishness and want of respect for the feelings of others. The only other great city in either hemisphere where the omnibuses are as bad as those of London is New York; but in that metropolis these vehicles mainly adapt themselves to the wants of one street only—the great spinal thoroughfare called Broadway—and have been all but superseded by the horse cars that run on the street railways in all the other great arteries and avenues of the city; so that the omnibus nuisance is reduced to a minimum. In some of the great towns and cities of the north of England and Scotland the public conveyances have been considerably improved, but the London omnibus proprietors, who have a virtual monopoly of the traffic, set improvement at defiance, build on the old style as cheaply as

they can, and compel the too patient public either to walk or to accept such inferior accommodation as they choose to afford.

It must, however, be admitted in justice to these monopolists, that if all the omnibuses which ply in the streets of London were constructed of a length sufficient to allow every passenger to be comfortably seated, and of a width sufficient to give easy passage up and down the interior, the traffic would be very greatly incommoded, unless the wheels could be brought under the body of the vehicle, as in the construction of railway carriages. This cannot be done without the aid of the rail, unless with an expenditure of horse power out of all proportion to the result to be attained.

The fact is that the omnibus system of London, however much it might be improved, cannot supply the daily increasing wants of this immense metropolis, and that London is even more deficient in the quantity than in the quality of the means of locomotion. However great the accommodation from time to time afforded, the wants of the ever increasing population seem continually to outstrip it. The main streets are all but blockaded with vehicles of every kind, and if a new and wide thoroughfare be opened up it speedily becomes as crowded as its competitors, without seeming to divert from the old channels any perceptible portion of the great stream of human and animal life that flows into the city and out of it like blood from the heart. Even the Metropolitan or Underground Railway—the greatest boon, notwithstanding the serious drawbacks and disadvantages attendant upon it, which has yet been conferred upon the London public—has neither diminished to any appreciable extent the above-ground traffic, or provided completely for the public necessities. The only objection to this railway consists in the fact that it is underground, and that however great the care and pains that may be employed to keep it pure and well ventilated, it will always be avoided by timid and delicate people, as well as by that large class who love fresh air, daylight, and the life and bustle of the streets. And this leads us to the point for the advocacy of which this pamphlet is published; the necessity of establishing in the metropolis the same system of locomotion

which has been introduced with such signal pecuniary success and such great public advantage in all the great cities of the United States and Canada—the system of Street Railways—for the conveyance of the multitude in large and commodious cars drawn by horses. This is the sole available remedy for the evils and defects of the existing London system, and cannot fail to be adopted as soon as public opinion is sufficiently enlightened upon the subject, when, as is the case with all great improvements, the wonder will be, not that street railways should have been introduced, but that they were not introduced twenty years previously, and that anybody was ever unwise enough to object to them.

Though the Americans are not burdened with as many Old World prejudices as we on this side of the Atlantic, though they boast with reason of being a quick, energetic, and practical people, looking to utility in the first instance whenever any new thing is brought under their notice, they did not immediately accept Street Railways, or allow them to be established without opposition. This fact, however, affords no matter of surprise. In all countries there are people who reject novelties, merely because they are novel, partly from ignorance, partly from dislike of change, and partly because they are too old to conform to new habits and ways of life. There is also a large class of persons whose pecuniary interests seem to be injuriously affected by change of any kind. Every public improvement has to fight its way to favour and acceptance, through the obstacles raised by both of these classes. Vaccination, one of the greatest blessings ever conferred upon the human race, was stoutly opposed both by learned doctors and the ignorant people, many of the former asserting, and of the latter believing, that the introduction of vaccine matter into the human system, would give a bovine character to the human blood, even if it did not cause young children to bleat like calves, or incipient horns to sprout upon the foreheads of men and women. The introduction of gas into our cities, scarcely sixty years ago, was opposed in the same way by silly and credulous people, alarmed at the idea of awful explosions that

might in the dead of night blow whole parishes into the air, and strew the earth with blood and ruin. The watermen of the Thames opposed the introduction of steam-boats on the river, and suffered a good deal of privation until they learned wisdom from adversity, and had sense enough to build steamers of their own, and so turn to advantage a system which they were powerless to overthrow. The old stage-coach proprietors, and a large proportion of the landed gentry and aristocracy of England, put every possible obstruction in Parliament and out of it, to the construction of railways; and many a town had influence enough to procure the passage of the hated thing, at a distance of several miles from its sacred precincts—not knowing that the dreaded rail was a fountain of prosperity to every populous place which it approached; and that one of its missions was to create new towns—not to destroy old ones. Even the introduction of the Metropolitan police—a body of men, without whose aid it would be impossible to preserve order by day or night in this teeming City, was opposed not alone by the friends of the decrepit and tottering watchmen, who were to be “deprived of bread in their old age;” but by ardent sticklers for British constitutional rights who affected to see in the new force an approach to the hated gendarmerie of Continental Europe. The objections taken to Street Railways on their first introduction into America were as numerous and untenable as these. First and foremost among the enemies of the new thing; were, of course, the omnibus and hackney carriage proprietors, (for New York, Philadelphia, and other great American cities have not even yet provided themselves with cabs) who were not unnaturally alarmed, lest the new and superior cars drawn by horses on the easy going rails, should deprive them of the greater part of their custom, and drive nine-tenths of them out of the field altogether. Next in order were the owners of private vehicles, who were apprehensive that damage would be done to their wheels or springs when they had to cross the rails. After these came the shopkeepers or storekeepers on the line of road, especially the linen-drappers, haberdashers, jewellers,

booksellers, &c., who fancied that ladies engaged in the fascinating amusement called "shopping," would not be able to draw up at their doors in their private carriages, in consequence of the obstruction caused by the cars. All these objections loudly urged in the press and at public meetings, and stimulated by the interested enmity of the omnibus proprietors, were satisfactorily answered and disposed of by the projectors of the new lines. In New York, in 1852 and 1853, Acts of the Legislature sitting at Albany were obtained. Two or three lines were constructed in the thoroughfares parallel with or converging to Broadway, and found to be great public conveniences. Even the omnibus proprietors were convinced, and hastened to embark their capital in the new enterprise, by which they could not only largely economise in the wear and tear of animal life—one horse on the rail doing more than the work of three on the common road—but earn far larger dividends on their outlay than they had ever done or ever could do in the omnibus business. Similar opposition was encountered in Brooklyn, Philadelphia, Baltimore, Washington, Boston, Chicago, San Francisco, and other cities; but as at New York, the experiment was ultimately made in each of them, and found its best justification in complete success. It was not long before most of the omnibus proprietors in these cities made common cause with the innovators, and hastened to invest their capital in the new enterprises. The storekeepers, so far from suffering any damage, gained an increase of business, while the wants and convenience of the travelling and locomotive public were so amply provided for, and at so reasonable a rate—that for one person who formerly went to and from his place of business in the omnibus, ten went by the cars. What occurred in the city of Philadelphia with a population of upwards of 600,000 may be taken as a sample of the manner in which the Street Railways overcame all opposition. In answer to an inquiry sent to the municipality by the promoters of Street Railways in London, "whether there was much opposition originally, and if so, whether the same feeling continued to exist," the Mayor of Philadelphia replied :—

“ When the first line was in progress of construction, during the winter of 1857 and 1858, all means, legal and otherwise, were resorted to to prevent its being laid. Injunctions were asked for at the courts and denied, and our City Councils were petitioned to interfere, and great feeling and excitement were evinced by those in opposition; the papers were freely used to show how the rights of the citizens were being infringed; and much personal animosity was shown towards the projectors, But the road was laid—and no sooner were the cars in full operation, and the great facilities afforded made evident, than a marked change in the feelings of the community was apparent, and, in some cases, the most bitter opponents became zealous advocates, and acknowledged their error of judgment.”

“ Since that time the track has been laid in our principal streets, and we now have 183 miles of rail within the city limits, upon which street cars are run for passenger traffic.”

In reply to the question, whether a proposition to remove the Street Railways and replace the cars by omnibuses, cabs or any other known mode of conveyance, would receive the support of any considerable number of people, the authorities of New York, Brooklyn, Boston, Philadelphia, Baltimore, Montreal, Toronto, Chicago, and other cities, asserted with remarkable unanimity that the idea was absurd, and that if such a proposition were seriously brought forward, it would be opposed by every class of the people.

It has been said, that “ nothing is so new as an old thing which is revived after having been long forgotten.” The novelty of Street Railways or Tramways is a novelty of this kind. Rails were laid down in many parts of England and Scotland before the steam-engine was invented, and horse-power was used upon them for the conveyance of coals and other heavy weights with great economy and advantage to all concerned. The horse-rail long preceded the steam-rail, so that the principle, new as it seems in its adoption by the Americans, is after all but our own English child come back to us from a far country. When Mr. Train seven years ago attempted to introduce Street Railways into London, the opposition which he encountered, and which ultimately led to the abandonment of his design, as far as the metropolis was concerned, was of a kind that, had he been a

more patient man, he might have triumphantly surmounted. His failure in London was mainly brought about by a circumstance by no means inherent in the project; the erroneous construction of his rail, which was above the level of the road and seriously obstructed all traffic but his own.

"The first thing to be guarded against in the laying down of a Street Railway," says the *Mechanics' Magazine*, "is the entire occupation of that portion of the road used by the cars to the exclusion of other vehicles from the line of track. Where this defect exists, it forms a fatal objection to street railways, and, unfortunately for Mr. Train, this was the very error into which he fell. He used a rail so constructed, that he virtually monopolised a portion of the roadway, and, at the same time, opened up a fruitful source of accident. Train's rail, it may be remembered, offered a great impediment to the public traffic, it was consequently a nuisance, and was complained of as such. The rail, as laid, was not level with the roadway, and it had a raised surface or tread from $\frac{3}{4}$ -in. to 1-in. above the plate or base of the rail, consequently the base plate, and also the pavement between the rails, was from $\frac{3}{4}$ -in. to 1-in. below the road level. Thus it is obvious that the breaking up of the surface of the street is both dangerous and difficult to the traffic of ordinary vehicles. But this is not all; should an ordinary street vehicle be running with one wheel on one rail of such a track, and should it have occasion to turn out on the side on which the wheel was binding or shouldering on to the tread of the rail, it would be impossible to do so at a less angle than 45 degrees, which angle is unattainable in most of our thoroughfares. Thus the result would be either a wrenched wheel or perhaps a serious accident."

If Mr. Train had been fortunate enough to discover a new and better rail that would have obviated these and other objections; and if he had been strong enough, pecuniarily and otherwise, to have struggled against the interested opposition which he excited; and had he been, in other respects, a better manager of the great business he had in hand, or known how to popularise himself as well as his project: it is very probable that, long ere this time, Street Railways would have been in successful operation in many parts of the metropolis, as they now are at Birkenhead and in the Potteries, where the rails laid down by Mr. Train have been replaced by others which are proved to be unobjectionable. But Mr. Train's London failure is not to be considered the failure of the system, though the omnibus proprietors and

others would fain make it appear so ; it was but the failure of an imperfectly developed project, brought forward imprudently. In the new attempts that have already been made, under better and more powerful auspices, to introduce the Street Railway into thoroughfares adapted in all respects to such traffic, the great mistake of Mr. Train has been avoided, and a form of rail patented which will not interfere in the slightest degree with the uses of the roadway by any kind of vehicle, and which cannot, by any possibility, be the cause of accident to horse or vehicle that would not equally occur on a common road. Thus, the fundamental and only real objection to Street Railways has been obviated, and all other objections, interested or ignorant, may well be left to free and fair discussion and to the light of experience. That experience is abundantly supplied in America, where the Street Rail is all but universal, and in every sense as necessary to the comfort and convenience of the people, rich and poor, as the steam railway itself, and as little likely to be superseded or interfered with.

One objection raised in London against the introduction of the Tramway, which deserves a word of notice, is the alleged narrowness of our streets. "It is all very well," exclaim the omnibus proprietors and the people in their interest, "to tell us of the advantages of the Tramway in the wide, straight, and level thoroughfares and avenues of the cities of the New World ; but in our crooked and narrow streets it would be impossible to introduce the same system." Such, however, is not the case. It is not intended to lay down Tramways in narrow streets ; but if it were, there would be no more difficulty in the matter in England than there is in America. The theory may sound well—and read well—but practice settles the controversy. One of the narrowest and longest streets on the North American Continent is Notre Dame Street, in Montreal, which is only twenty feet wide on the average, between the foot-paths. Yet the rail is laid the whole length of this main thoroughfare, and the cars travel along it up and down, at short intervals, from early morning till night, without causing any obstruction to the other traffic. In Quebec the rails are

laid in a street only seventeen and a-half feet wide, and with no inconvenience to anybody. Ann Street, in New York, is but twenty feet wide between the foot-paths, and has its Tramway; while the other streets in that city, where the rails are laid, range from a width of twenty-six feet to forty-eight; and in those larger thoroughfares, called "Avenues," there is a width of sixty feet. In Philadelphia, the average width of twenty-five important streets, on which the Tramway is laid, is twenty-six feet. The Avenues, as in New York, are wider, and range from forty-eight to sixty feet, and on some of the last named, there are four lines of Tramway. Six lines of rails run through Fulton Street in Brooklyn, which, at its most populous and most commercial part, is but thirty-six feet in width. In Park Row, New York, abutting on Broadway, and forty-eight feet wide, there are four lines of rail, bringing the cars of as many Companies from the remoter and more fashionable districts down to the banking, commercial, and shipping centres of the city. The following tabular statement shows the width of streets in London through which it is proposed to carry the Metropolitan Tramways, proving that they are for the most part wider than the streets of American cities, through which Tramways are carried, and thus effectually disposing of the objections raised upon the ground of narrowness.

WIDTH BETWEEN THE CURBSTONES OF THE STREETS IN THE
LINE OF THE PROPOSED METROPOLITAN TRAMWAYS.

TRAMWAY No. 1.

	Broadest Point. Feet.	Narrowest. Feet.
Archway Road	36	36
Holloway Road	56	30
Upper Street, Islington (Holloway Road to Cross Street)	41	27
Ditto (Cross Street to Islington Green)	34	21
High Street (Islington Green to Liverpool Road) .	68·6	33·6
High Street, Islington	60	42
City Road (Angel to Baldwin Street)	43	32
Ditto (Baldwin Street to Artillery Ground)	50	33·6
Finsbury Square	52	47
Finsbury Place	49	41

TRAMWAY No. 2.

Seven Sisters Road	45	28
Park Road	40	32
Camden Road	43	39
High Street, Camden Town	40	34
Hampstead Road	41	33·6
Tottenham Court Road	58	31·0

TRAMWAY No. 3.

							Broadest Point.	Narrowest.
							Feet.	Feet.
Whitechapel High Street	..	..	..	..	..	..	98·0	40
Whitechapel Road	..	..	..	..	..	..	56	44
Mile End Road	..	..	..	..	..	..	51	45
Bow Road	..	..	..	..	..	..	51	49
High Street, Bow	..	..	..	..	..	..	56	25·6
Stratford Road	..	..	..	..	..	..	38	32

TRAMWAY No. 4.

High Street, Clapham	..	..	..	..	..	..	50	33·6
Clapham Rise	..	..	..	..	..	..	45	34
Clapham Road	..	..	..	..	..	..	49	37·6
Kennington Park Road	..	..	..	..	..	..	53	38·6

TRAMWAY No. 5.

Brixton Hill	..	..	..	..	..	..	67	51
Brixton Rise	..	..	..	..	..	..	59	53
Brixton Road	..	..	..	..	..	..	53	32

TRAMWAY No. 6.

Kennington Green	..	..	..	..	..	..	42·6	37
Kennington Road	..	..	..	..	..	..	65	40
Westminster Bridge Road	..	..	..	..	..	..	45	37·6

All other objections to the introduction of Tramways into London, except the two mentioned—the form of the rail and the width of the streets,—are puerile and futile, and only deserve notice because they show the animus of the persons interested in the existing monopoly, and the small as well as great misrepresentations to which they have recourse when they strive to impede the progress of a notable public improvement, which they imagine will be prejudicial to themselves. Beaten upon all other points, they still allege that there is more danger to the passengers in the Tramway cars and to pedestrians, than can or does result from omnibuses. But here also experience is against them. Carefully prepared and irrefutable statistics tell a different tale.

The Coroner of the City of New York stated officially that in the year 1865, within his district, “there occurred 135 vehicle casualties—of which “25 were caused by steam cars, 46 by street cars, 26 by omnibuses, and “38 by trucks or other vehicles.

“The number of passengers conveyed by City Railways in 1865 was 60 “millions, and those carried in omnibuses $5\frac{1}{2}$ millions.

“At the rate of casualties from street cars, the number of killed by “omnibuses should have been only $4\frac{1}{5}$ instead of 26, which goes to prove “that the safety on street cars is six times greater than that on omnibuses, “The reason is quite obvious. The omnibus-driver, being seated on deck. “(American for an elevated or box seat,) has not the same command over

"his horses as when on a level with them. There are no brakes on our omnibuses, and, consequently, they cannot be brought to a sudden halt, while the street car stops easily within the double of its length. Pedestrians distinguish at a distance the approach of a car by sight and ear, and fear danger from it but at one particular point, which is the crossing of the track. Stages, however, are swaying from one side of the street to the other, to accommodate passengers, and pedestrians are taken unawares by the sudden change of their course.

"The utter recklessness of passengers getting on or off the steps while the car is in motion, appears, to judge from the records, to be the most fruitful cause of accident."

To this statement the coroner might have added, that accidents occur in omnibuses quite as frequently from this latter cause as in railway cars. The statistics of London, if carefully collected, would undoubtedly show that the sudden starting of the horses of an omnibus, when a passenger has been standing on the step—as no passenger should do,—engaged perhaps in paying his fare to, or receiving change from the conductor, is a constant source of danger to life and limb; and that more accidents occur from this cause than the public is aware of.

There are two slight disadvantages connected with the cars on Street Railways in America, from which those to be introduced into London will be exempt. The first results from the climate; the second from the habits of the people. In summer the weather is too severely hot, and in winter too severely cold, to permit of outside travelling, with any degree of comfort—or even of safety. The omnibus drivers in Broadway, New York, and in other cities, further south and west, are compelled during the months of June, July, August, and September, to protect themselves from the risk of sunstroke, by large awnings, or white gig umbrellas affixed over the seat, and it is no unusual thing in the summer to read in the newspapers that some poor man has paid the penalty for neglecting this precaution, by tumbling from his perch in a fit of apoplexy. In winter the cold is sometimes so intense, as to render the use of furs and the thickest woollen garments essential—and to compel the drivers of public vehicles to protect their ears and as much of the face as possible, from the freezing winds. Thus

in all seasons inside travelling is the pleasantest and safest—and is alone provided for, both in cars and omnibuses. In our milder and more equable climate, where rain and sunshine, rather than the extremes of heat and cold are the alternations to which we are subject—the seat on the roof is preferred by many—and especially by smokers—to the seat inside; so that the cars to be employed in London can be constructed to carry with the same amount of horse power almost twice as many passengers as the cars in America. The second inconvenience in America is the overcrowding of every kind of public conveyance—the omnibus—the railway car—and the street car. There is either no law against overcrowding, or it is not enforced. The passenger who pays for a seat does not insist upon his right, but is content with standing room if he can get no other; and it continually happens, not only that every seat is occupied—sometimes with a lady on a gentleman's lap,—but that the whole inner passage between the opposite seats is blocked up by standing passengers, who hold on by straps affixed to the roof for the purpose of steadying them. Often, when a car seems as full as it can hold of sitting and standing travellers, the conductor will squeeze in a half-dozen or a dozen more, and nobody remonstrates. The Americans, like President Taylor of old days, are “Rough and Ready;” and if the car passengers can but get the women seated, they submit to any amount of inconvenience for themselves, and make no complaints. John Bull, however, without being less gallant or less considerate for the comfort of the ladies, has other notions. If he pays for a seat he will have a seat; and if none is to be obtained in the vehicle which he first hails, he will wait for the next. This rule, properly enforced by the conductors of Tramway cars in London, will combine with all the American advantages of the system a peculiarly English advantage, which will render our metropolitan cars a vast improvement upon those of the American cities.

It may be mentioned for the instruction of such shopkeepers in London, as are opposed to the introduction of the Tramway into the streets in which they carry on their business, that opposition

such as theirs, has sometimes been successful; but never without benefit to clearer-sighted shopkeepers in rival thoroughfares—or without injury to themselves. At Brooklyn, according to an official report authenticated by the mayor of that city, there was originally a decided opposition to the introduction of the Tramway, on the part of the fashionable tradesmen along the lines of the proposed route—on the ground that passengers would be carried past their stores without stopping, and that private carriages would be driven from the streets. But the result belied their fears. The general traffic was increased and the business along with it, and the rents of the stores were in some instances doubled. The same results occurred in Philadelphia, and notably in San Francisco. In this last mentioned city it appears on the authority of a letter from Mr. A. H. DIXON, a former resident, that owing to the violent opposition from the property owners and store keepers of Montgomery Street, on which at that time were situated the finest buildings and the largest and handsomest stores, the company was obliged to lay their Tramway through Sansome Street, a parallel thoroughfare of less pretensions. But a clause was inserted in the bill, granting the right of laying a Tramway through Montgomery Street, whenever a majority of the owners and occupants of the property should formally consent to it.

“The result,” says Mr. Dixon, “was that within six months from the time of the completion of the Tramway, the shopkeepers of Montgomery Street were seized with a panic, for they saw the retail business of Sansome Street rapidly increasing, while theirs was diminishing.

“An arrangement was immediately made with the company, signed by every shopkeeper and most of the real estate owners in Montgomery Street, authorising them to lay their Tramway through said street, as at first desired.

“The Sansome Street shopkeepers, however, objected to a removal of the Tramway from their street. Finally, a compromise was effected, resulting in this, that a line should be laid through Montgomery Street, and that the carriages of the Com-

pany should, during half of the day, pass north, through Sansome Street, returning south, through Montgomery Street, and *vice versa* during the other half. The number of passengers carried over the Tramway soon became four-fold greater than before by omnibus, and suburban property on the line within one year increased fifty per cent., and often a hundred per cent. in value."

Nor is this experience confined to the cities of America. It was proposed last year by the promoters of Tramways in Liverpool, to lay down their rails and run their cars, through Bold Street, one of the fashionable streets of that populous town—if not the most fashionable. The project however, was so strenuously opposed by the shopkeepers of Bold Street, that the promoters in their bill now before Parliament—omitted Bold Street altogether from their scheme, and substituted Renshaw Street. In the meanwhile however, the drapers, booksellers, chemists, and other shopkeepers in Bold Street, learned to distrust their own prudence in this matter, and convened a meeting of their body—which was held on Monday the 18th of November (1867), at which they passed a resolution, declaring it desirable that Bold Street should be included in the proposed line. They openly expressed their fears that the shopkeepers of Renshaw Street would be enriched, and that they would be impoverished, if the promoters of the Tramway, insisted upon complying with their first request. Thus the matter rests; and mention has only been made of it here, for the instruction and warning of such London tradesmen, as may not have fully studied the subject—or allowed their fears to overmaster their better judgment and the experience of other people.

Having shown that there are no objections to Street Railways or Tramways in London, except such as are wholly untenable; and are the result either of ignorance and prejudice on the one hand, or of interested opposition on the other, we may very briefly summarise their advantages wherever they have been introduced. The advantages to the public are easy and expeditious transit from place to place, at less than half the cost, and with more than double the speed and the comfort of the

omnibus. Their advantages to the shopkeepers on the lines of route which they traverse, are a vastly increased amount of business consequent upon the increase of traffic. Their advantages to house proprietors on the lines is an augmented value of house property. Their advantages to the parishes is a diminution of the highway and paving rate, inasmuch as the Companies pay the whole expense of maintaining in repair all those portions of the public way which their cars traverse. On the other hand their disadvantages are *nil*. None have ever been proved, though many have been asserted. In conclusion, and in one sentence, Street Railways in London will not only be a great convenience to all classes, but have become a paramount public necessity, which no other agency can supply; the more especially, if the great lines of traffic and the wide streets—all converging to the city, from every point of the great metropolitan circumference be selected for the Tramways. By this means and this alone, will the merchants, clerks, workpeople, and others, be enabled to reach with ease, comfort, and economy, the scene of their daily avocations, and return to their homes in the ever increasing and expanding suburbs of this large congeries of towns and cities which are called London. By this means also, in the intervening hours of the day, will their wives and families be enabled to exercise a freedom of choice in their marketing and shopping—and be conveyed with double the celerity and comfort and at half the cost of the omnibus to and from every part of the metropolis.

BUSINESS DONE ON SIX OF THE CITY RAILROADS OF NEW
YORK AND BROOKLYN IN 1866.

	MILES.	CARRIAGES.	HORSES.	PASSENGERS.
Third Avenue	8 ..	163 ..	1304 ..	20,000,000
Sixth Avenue	4 ..	73 ..	584 ..	8,323,737
Eighth Avenue	9 ..	157 ..	1256 ..	12,095,602
Broadway and Seventh Avenue }	8 ..	98 ..	784 ..	11,051,058
Brooklyn City	29 ..	196 ..	1568 ..	17,199,049
Brooklyn and Newtown	5½ ..	37 ..	296 ..	2,122,179
Six Roads	63½ ..	724 ..	5792 ..	70,791,625

ON THE PHILADELPHIA STREET-RAILWAYS, 1863.

	MILES.	CARRIAGES.	HORSES.	PASSENGERS.
Philadelphia and West Philadelphia }	6 ..	53 ..	316 ..	4,336,000
Thirteenth & Fifteenth	6¼ ..	17 ..	125 ..	1,750,000
Chestnut and Walnut ..	4 ..	24 ..	142 ..	2,600,000
Fairmount and Arch ..	3½ ..	20 ..	119 ..	1,705,000
Tenth and Eleventh ..	7 ..	35 ..	201 ..	3,250,000
Frankford and South ..	12 ..	40 ..	257 ..	4,900,000
Philadelphia & Grays-ferry }	7 ..	17 ..	150 ..	1,900,000
Green and Coates	4½ ..	33 ..	236 ..	2,900,000
Second and Third	19 ..	70 ..	423 ..	7,500,000
Nine Roads	69	309	1969	30,841,000

In New York and Brooklyn, in 1866, six Street Railways carried 70,791,625 passengers in 724 carriages with 5792 horses.

In Philadelphia, in 1863 (the latest returns now before us), nine Street Railways carried 30,941,000 passengers in 309 carriages with 1969 horses.

In London, the "General Omnibus Company," by Report for the first half-year of 1867, carried at the rate of 41,334,602 passengers per annum with 582 carriages and 6677 horses.

These figures show that each carriage and each horse carried in the several places—

New York .. each carriage ..	97,778 .. each horse ..	12,222 passengers.
Philadelphia	99,773	15,651 ..
London	71,021	6,525 ..

The carriages of the London General Omnibus Company passed over 13,000,000 miles of street, *built and kept in repair* by the City authorities, at the expense of the ratepayers.

The carriages of the New York and Brooklyn Railways passed over 11,700,000 miles of street, *built and kept in repair by the COMPANIES*, at their own expense—that is, the parts used by them.

DESCRIPTION OF THE "CRESCENT" RAIL.

From the *Mechanics' Magazine*.

THE revival of the tramway system in London is contemplated by a Company who intend applying to Parliament in the ensuing session for the necessary powers to carry out their views. As the first consideration is the non-interference of the rails on which the cars are to run with the contour of the road, and the ordinary traffic of the metropolis, MESSRS. JOHN NOBLE & Co., of 10, Bridge Street, Westminster, have designed a rail which appears to meet all the requirements of the times. The advantages claimed for this street rail or tramway are that vehicles are not obstructed in passing over it, whatever may be the angle at which they cross, and that the ordinary traffic running parallel with it is not interfered with. In the case of street rails heretofore used, serious practical defects have been found. Conveyances were severely strained and injured, in attempting to cross the shoulders of the rail, by skidding or sliding on the tram. The rail itself, projecting as it did from the surface of the roadway, was forced outward by the action of the wheels of heavy carriages, thus destroying the gauge of the track and loosening the whole structure. The "crescent" rail, however, presenting no such local inconvenience, cannot cause any such injury, as the surface of the street or road can be traversed as easily as if there was no such tram upon it. The rails generally used being flat on their under surface and resting on flat sleepers, allow the water which enters the joints to flow along the surface of the sleeper, causing rapid decay to both. From the form of the "crescent" rail, and the solid bearing it has upon the sleeper, it requires only about half the weight of iron to make the rail of equal strength to those generally in use. The joint plates E, being also curved on the under side, prevent the water from resting on the sleeper. In the other form of rail, the pressure and concussion at these points caused the breaking up and decay of the sleeper, and consequently the repairs of the roadway were very frequent.

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EcT

Mackay, Charles

M1532st

Street tramways for London.

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